

**REMARKS/ARGUMENTS**

Claims 1, 3-9, and 13-18 are pending. Claims 2, 10-12, and 19 has been canceled without prejudice and without disclaimer. Claims 1, 4, 5, 9, 13, and 17 have been amended. No new matter has been introduced. Applicant believes the claims comply with 35 U.S.C. § 112.

Claims 1, 3-9, and 13-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yanai et al. (US 6,173,377) in view of Yamagami (US 2002/0095489). The Examiner recognizes that Yanai et al. does not disclose the periodic writing of a heartbeat signal to a primary volume, and cites Yamagami for allegedly providing the missing teaching.

Claims 1 and 3-8

Applicant respectfully submits that independent claim 1 is patentable over Yanai et al. and Yamagami because, for instance, they do not teach or suggest a first storage unit including a disk heart beat write unit and a second storage unit including a disk heart beat detection unit; and a first information processing unit including a node heart beat write request unit, the first storage unit including a node heart beat write unit, the second storage unit including a node heart beat transmission unit, and a second information processing unit including a node heart beat detection unit.

In the claimed invention, there are two kinds of heart beat signals: node heart beat signal and disk heart beat signal. The disk heart beat write unit of the first storage unit writes a first heart beat message to the first storage volume, and the disk heart beat detection unit of the second storage unit detects a replication of the first heart beat message. In addition, the node heart beat write request unit of the first information processing unit repeatedly transmits a request to write a second heart beat message to the first storage unit, the node heart beat write unit of the first storage unit writes the second heart beat message to the first storage volume, the node heart beat transmission unit of the second storage unit transmits a replication of the second heart beat message to the second information processing unit, and the node heart beat detection unit of the second information processing unit detects the replication of the second heart beat message transmitted by the node heart beat

transmission unit. See, e.g., paragraphs [0083]-[0095], [0119]-[0181], and Figs. 15-19 of US 2005/0148891A1 of the present application.

Yanai et al. does not disclose transmission of heart beat signals. Yamagami discloses only the node heart beat signal, but not the disk heart beat signal.

For at least the foregoing reasons, claim 1 and claims 3-8 depending therefrom are patentable over Yanai et al. and Yamagami.

Claims 9 and 13-16

Applicant respectfully submits that independent claim 9 is patentable over Yanai et al. and Yamagami because, for instance, they do not teach or suggest creating disk heart beat signals at the first storage unit to provide a first heart beat message; creating node heart beat signals at the first information processing unit to provide a second heart beat message; in the first storage unit, repeatedly writing the first heart beat message to the first storage volume at intervals; in the second storage unit, detecting replicated first heart beat message to be written to the second storage volume; repeatedly transmitting from the first information processing unit a request to write a second heart beat message to the first storage volume; writing the second heart beat message to the first storage volume; transmitting from the second storage unit to the second information processing unit a replication of the second heart beat message; and at the second information processing unit, detecting the replication of the second heart beat message.

As discussed above, Yanai et al. does not disclose transmission of heart beat signals, while Yamagami discloses only the node heart beat signal, but not the disk heart beat signal.

For at least the foregoing reasons, claim 9 and claims 13-16 depending therefrom are patentable over Yanai et al. and Yamagami.

Claims 17 and 18

Applicant respectfully submits that independent claim 17 is patentable over Yanai et al. and Yamagami because, for instance, they do not teach or suggest a first storage unit including a disk heart beat write unit and a second storage unit including a disk heart beat detection unit; and a first information processing unit including a node heart beat write

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request unit, the first storage unit including a node heart beat write unit, the second storage unit including a node heart beat transmission unit, and a second information processing unit including a node heart beat detection unit.

As discussed above, Yanai et al. does not disclose transmission of heart beat signals, while Yamagami discloses only the node heart beat signal, but not the disk heart beat signal.

For at least the foregoing reasons, claim 17 and claim 18 depending therefrom are patentable over Yanai et al. and Yamagami.

### CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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